

# EXHIBIT D



CONTINUED PROSECUTION APPLICATION (CPA)

APPLICANTS: Pavel Mayer et Al.

TITLE: METHOD AND DEVICE FOR PICTORIAL  
REPRESENTATION OF SPACE-RELATED DATA

ATTORNEYS: MARSHALL & MELHORN

ATTORNEY  
DOCKET: 1-13416

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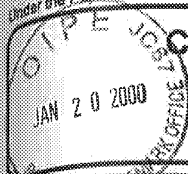
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# CONTINUED PROSECUTION APPLICATION (CPA) REQUEST TRANSMITTAL

Submit an original, and a duplicate for fee processing.  
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Attorney Docket No.	1-13416
First Named Inventor	PAVEL MAYER ET AL.
Examiner	P. NGUYEN
Group / Art Unit	2772
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This is a request for a ☒ continuation or ☐ divisional application under 37 C.F.R. § 1.53(d),  
 (continued prosecution application (CPA)) of prior application number 08 / 767,829,  
 filed on 12/17/96, entitled METHOD AND DEVICE FOR PICTORIAL REPRESENTATION OF SPACE-RELATED DATA

**NOTES**

**FILING QUALIFICATIONS:** The prior application identified above must be a nonprovisional application that is either: (1) complete as defined by 37 C.F.R. § 1.51(b), or (2) the national stage of an international application in compliance with 35 U.S.C. 371. A Notice will be placed on a patent issuing from a CPA that it is subject to the twenty-year patent term regime set forth in 35 U.S.C. § 154(a)(2) and (b). Therefore, the prior application of a CPA may have been filed before, on or after June 8, 1995.

**C-I-P NOT PERMITTED:** A continuation-in-part application cannot be filed as a CPA under 37 C.F.R. § 1.53(d), but must be filed under 37 C.F.R. § 1.53(b).

**EXPRESS ABANDONMENT OF PRIOR APPLICATION:** The filing of this CPA is a request to expressly abandon the prior application as of the filing date of the request for a CPA. 37 C.F.R. § 1.53(b) must be used to file a continuation, divisional, or continuation-in-part of an application that is not to be abandoned.

**ACCESS TO PRIOR APPLICATION:** The filing of this CPA will be construed to include a waiver of confidentiality by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 C.F.R. § 1.14 to access to, copies of, or information concerning, the prior application may be given similar access to, copies of, or similar information concerning, the other application or applications in the file jacket.

**35 U.S.C. 120 STATEMENT:** In a CPA, no reference to the prior application is needed in the first sentence of the specification and none should be submitted. If a sentence referencing the prior application is submitted, it will not be entered. A request for a CPA is the specific reference required by 35 U.S.C. 120 and to every application assigned the application number identified in such request, 37 C.F.R. § 1.78(a).

- ☐ Enter the unentered amendment previously filed on \_\_\_\_\_ under 37 C.F.R. § 1.116 in the prior nonprovisional application.
- ☒ A preliminary amendment is enclosed.
- This application is filed by fewer than all the inventors named in the prior application, 37 C.F.R. § 1.53(d)(4).
  - ☐ **DELETE** the following inventor(s) named in the prior nonprovisional application:  
 \_\_\_\_\_
  - ☐ The inventor(s) to be deleted are set forth on a separate sheet attached hereto.
- ☐ A new power of attorney or authorization of agent (PTO/SB/81) is enclosed.
- Information Disclosure Statement (IDS) is enclosed: 01/24/2000 DUUUNG 00000092 08767829
  - ☐ PTO-1449 01 FC:231 345.00 OP
  - ☐ Copies of IDS Citations 02 FC:203 45.00 OP

[Page 1 of 2]

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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
TOTAL CLAIMS (37 C.F.R. § 1.16(c))		-20 =		x \$ _____ =	\$ _____
INDEPENDENT CLAIMS (37 C.F.R. § 1.16(b))		-3 =		x \$ _____ =	\$ _____
MULTIPLE DEPENDENT CLAIMS (if applicable) (37 C.F.R. § 1.16(d))				+ \$ _____ =	\$ _____
				BASIC FEE (37 C.F.R. § 1.16(a))	\$ _____
				Total of above Calculations =	\$ _____
				Reduction by 50% for filing by small entity (Note 37 C.F.R. §§ 1.9, 1.27 & 1.28).	\$ _____
				TOTAL =	\$ _____

## 6. Small entity status:

- a. ☐ A small entity statement is enclosed.  
b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.  
c. ☐ Is no longer claimed.

7. The Commissioner is hereby authorized to credit overpayments or charge the following fees to Deposit Account No. 13 - 1816:

- a. ☐ Fees required under 37 C.F.R. § 1.16.  
b. ☐ Fees required under 37 C.F.R. § 1.17.  
c. ☐ Fees required under 37 C.F.R. § 1.18.

8. ☒ A check in the amount of \$ 390.00 is enclosed.9. ☒ Other: RETURN CARD; CHECKS; 3 MONTH EXT. OF TIME; PRELIMINARY AMENDMENT**NOTE:**

The prior application's correspondence address will carry over to this CPA  
UNLESS a new correspondence address is provided below.

## 10. NEW CORRESPONDENCE ADDRESS

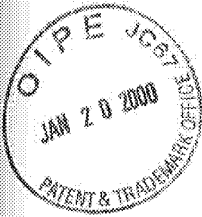
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## 11. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print/Type)	PATRICK D. FLOYD
Signature	<i>Patrick D. Floyd</i>
Registration No. (Attorney/Agent)	39,671
Date	01/20/00



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Heidi M. Walters  
(typed or printed name)

Heidi M. Walters  
(signature)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:  
Pavel Mayer et al.

Examiner: P. Nguyen

Filed: December 17, 1996  
Serial No.: 08/767,829

Group Art Unit 2772

For: METHOD AND DEVICE FOR  
PICTORIAL REPRESENTATION]  
OF SPACE-RELATED DATA ]

Attorney Docket 1-13416

January 20, 2000

PRELIMINARY AMENDMENT

Dear Honorable Sir:

Prior to the first Office Action, please amend the CPA application being filed concurrently herewith as follows:

Cancel Claims 1-37

Add new Claims 38-79 as follows:

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1.  
38. A method of providing a pictorial representation of space-related data of a selectable object, the representation corresponding to the view of the object by an observer with a selectable location and a selectable direction of view comprising:

(a) providing a plurality of spatially distributed data sources for storing space-related data;

(b) determining a field of view including the area of the object to be represented through the selection of the distance of the observer to the object and the angle of view of the observer to the object;

(c) requesting data for the field of view from at least one of the plurality of spatially distributed data sources;

(d) centrally storing the data for the field of view;

(e) representing the data for the field of view in a pictorial representation having one or more sections;

(f) dividing each of the one or more sections having image resolutions below a desired image resolution into a plurality of smaller sections, requesting higher resolution space related data for each of the smaller sections from at least one of the plurality of spatially distributed data sources, centrally storing the higher resolution space related data, and representing the data for the field of view in a pictorial representation; and

(g) repeating step (f), dividing the sections into smaller sections, until every section has the desired image resolution or no higher image resolution data is available.

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2.  
~~39~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, further including altering the selectable location and performing steps (b) through (g).

4.  
~~40~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, further including altering the selectable direction of the view and performing steps (b) through (g).

6.  
~~41~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein step (f) further includes requesting data of a uniform resolution for each of the smaller sections.

7.  
~~42~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein steps (c) and (f) further include requesting data not already centrally stored from only one of the spatially distributed data sources.

8.  
~~43~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein step (f) further includes showing only the centrally stored data of each section with the highest spatial density.

9.  
~~44~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein step (f) further includes effecting the representation of the data in an optional pre-set form of representation.

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<sup>10</sup>  
~~45~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including removing the data of a section from the central store when the section passes out of the field of view due to an alteration in the location or of the angle of the view.

<sup>11</sup>  
~~46~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including permanently centrally storing at least one full set of space-related data with a low spatial resolution.

<sup>12</sup>  
~~47~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including not showing the regions of the object located with respect to the observer behind non-transparent areas of the object.

<sup>13</sup>  
~~48~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein step (f) comprises dividing each of the one or more sections using a model of the binary tree.

<sup>14</sup>  
~~49~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein step (f) comprises dividing each of the one or more sections using a model of the quadrant tree.

<sup>15</sup>  
~~50~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein step (f) comprises dividing the sections using a model of the octant tree.

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~~16.~~  
~~51.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, further including using an adaptive sub-division model with a plurality of models used next to one another for subdividing the field of view into smaller sections.

~~17.~~  
~~52.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein the data are present as pixel graphics and/or as vector graphics and/or in tabular form.

~~18.~~  
~~53.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein the object is a heavenly body.

~~27.~~  
~~54.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein the object is the earth.

~~28.~~  
~~55.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein steps (e) and (f) further include representing the data with a polygonal grid model.

~~30.~~  
~~56.~~ The method of pictorial representation defined in Claim ~~38~~<sup>1</sup>, wherein steps (e) and (f) further include representing the data with a three-dimensional geometrical model of the topography of the objects, the spatial relationship of the data being given by the provision of three co-ordinates on the geometrical model.

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<sup>29.</sup>  
~~58.~~ The method of pictorial representation defined in Claim <sup>28</sup>~~58~~, wherein step (f) comprises dividing the sections using a model of the octant tree.

<sup>19.</sup>  
~~58.~~ The method of pictorial representation defined in Claim <sup>18</sup>~~58~~, wherein steps (e) and (f) further include representing the data with a two-dimensional polygonal geometrical model of the topography of the object, the spatial relationship of the data being given by the provision of two co-ordinates on the polygonal geometrical model.

<sup>20.</sup>  
~~59.~~ The method of pictorial representation defined in Claim <sup>19</sup>~~58~~, wherein height information is represented as color vertices on the two-dimensional polygonal geometrical model.

<sup>21.</sup>  
~~60.~~ The method of pictorial representation defined in Claim <sup>19</sup>~~58~~, wherein an adaptive topographical grid model is used, the spatial distance between two grid lines becoming smaller as the topographical altitude becomes greater.

<sup>22.</sup>  
~~61.~~ The method of pictorial representation defined in Claim <sup>19</sup>~~58~~, wherein step (f) further includes dividing each of the one or more sections using a model of the quadrant tree.

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<sup>23</sup>  
~~62~~ The method of pictorial representation defined in Claim ~~61~~<sup>22</sup>, wherein step (f) further includes dividing each of the one or more sections using an adaptive sub-division model such that the subdivision merges into a binary tree at the poles.

<sup>24</sup>  
~~63~~ The method of pictorial representation defined in Claim ~~58~~<sup>19</sup>, wherein in the two-dimensional polygonal grid model, spatial data are shown on a plurality of different two-dimensional layers.

<sup>25</sup>  
~~64~~ The method of pictorial representation defined in Claim ~~53~~<sup>18</sup>, wherein the representation in steps (e) and (f) is in the form of a globe.

<sup>26</sup>  
~~65~~ The method of pictorial representation defined in Claim ~~53~~<sup>18</sup>, wherein the representation in steps (e) and (f) is in the form of cartographic form of representation.

<sup>3</sup>  
~~66~~ The method of pictorial representation defined in Claim ~~59~~<sup>2</sup>, further including determining the data and/or the co-ordinates of the data in terms of a new co-ordinate system.

<sup>6</sup>  
~~67~~ The method of pictorial representation defined in Claim ~~40~~<sup>4</sup>, further including determining the data and/or the co-ordinates of the data in terms of a new co-ordinate system.

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<sup>31</sup>  
~~68~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein the space-related data include CAD models.

<sup>32</sup>  
~~69~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including inserting animated objects into the pictorial representation.

<sup>33</sup>  
~~70~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including inserting display tables into the pictorial representation.

<sup>34</sup>  
~~71~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, further including inserting information and/or directly generated image material into the representation.

<sup>35</sup>  
~~72~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein the directly generated image material includes camera shots.

<sup>36</sup>  
~~73~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein the space related data are provided with references to further spatial data.

<sup>37</sup>  
~~74~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein the space related data are provided with references to thematically adjacent data.

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<sup>38</sup>  
~~75.~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~, wherein the space related data are provided with references to data of the same area with another resolution.

<sup>39</sup>  
~~76.~~ The method of pictorial representation defined in Claim <sup>1</sup>~~38~~ further including determining a probability for the regions surrounding the field of view that the regions will pass into the field of view when there is an alteration in the location or of the angle of view of the observer.

<sup>40.</sup> <sup>39</sup>  
~~77.~~ The method of pictorial representation defined in claim <sup>39</sup>~~76~~ further including requesting and centrally storing the data of the areas with the highest probability.

<sup>41.</sup>  
~~78.~~ The method of pictorial representation defined in claim <sup>1</sup>~~38~~, wherein steps (c) and (f) further include transmitting data asynchronously.

<sup>42.</sup>  
~~79.~~ The method of pictorial representation defined in claim <sup>1</sup>~~38~~ wherein steps (e) and (f) further include showing the data on a screen.

#### REMARKS

Applicant has canceled claims 1-37, and added new claims 38-79. Favorable consideration of these claims is respectfully requested.

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Regarding the cited references, Shimada shows a plurality of different maps in layers A-D corresponding to the same district and teaches dealing with the correspondence between pages having different scales. Shimada does not teach the method of continually dividing and subdividing sections of the pictorial representation having unacceptable resolution into smaller and smaller sections, requesting higher resolution space related data for each of these smaller sections and repeating this process until every section has an acceptable resolution or no more higher resolution data is available. Shimada explicitly states in claim 1 that "each layer comprises the complete data of a different map".

While Shimada teaches a plurality of spatially distributed data, Shimada does not teach using a plurality of spatially distributed data sources for storing the space-related data. Fig. 2a of Shimada shows only one single file storage unit for all the maps and does not show a network communicating between spatially distributed data sources.

For these reasons, newly added independent claim 38, and claims 39-79 depending therefrom, are patentable over the cited references. Accordingly, it is believed that the application is in condition for allowance.

Respectfully submitted,  
MARSHALL & MELHORN

  
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